

ACKNOWLEDGEMENTS

Mrs M. Le Croy (AMNH) and Mr W. Longmore (AM) kindly answered queries on specimens in collections. Dr G.M. Storr arranged loans of specimens and provided facilities for this study.

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NOTES ON NESTING OF GULL-BILLED TERNS (GELOCHELIDON NILOTICA)

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On 3 September 1980 a flock of about 20 Gull-billed Terns was observed 1-2 kilometres west of Lake Annean swooping down below the tree tops. At first they appeared to be feeding over a small lake, however on closer observation there was no water and the birds were hunting over dry mulga scrub. The direct flights from here to some islands in the centre of the lake suggested that they were feeding young.

After walking through mud and water up to a metre deep we investigated several of the islands and found three colonies totalling some eighty pairs which contained newly hatched young and eggs.

Together with Mr. Jim Masters I returned on 12 September to investigate the birds further, and to obtain photographs.

The birds were nesting in colonies, building on the low long sand spits out in the centre of the lake. Nests were strung out in a vague line along the beaches at intervals of 2-4 metres apart. Eight different groups had formed on seven different islands. Some of the colonies contained mainly fresh eggs while others contained mainly newly hatched young. The nests in the centre section were built first with later arriving birds building on the outside. Young were already hatched in the centre section of some colonies while on the extreme outside some were still making scrapes.

Colonies consisted of: No. 1 = 60 nests, No. 2 = 31 nests, No. 3 = 25 nests, No. 4 = 2 nests, No. 5 = 3 nests, No. 6 = 28 nests, No. 7 = 67 nests, No. 8 = 36 nests. During our four day stay a continuous loud dispute went on all day on another sand spit, and on the last day we noted that several new scrapes had been made. The 252 nests counted all contained eggs and young, and these together with the many new scrapes would indicate that there were about 600 birds present. Most nests were well made structures built of locally gathered samphire sticks and lined with finer twigs. Chips of soft stones were prominent in many nests; some of them had an elaborate pathway built to the water. The birds were observed close up from a hide actually making their scrapes and building their nests. The twigs were not carried to the nests, but picked up with the bill and tossed backwards towards the nest, then the accumulated material was built onto the nest.

Clutch size varied from one egg to five, three being common. Colour also varied, with few nests containing identical eggs. Both sexes incubated, changing often after less than one hour. The brooding bird flew off to the mainland to feed as soon as they were relieved from the nest. Grasshoppers and several species of skinks were brought back by the birds after flying several kilometres away, and these were fed to the young. Many appeared to be *Ctenotus* sp. Many of the skinks were 20 cm in length. The skinks were held in the bill by the neck although occasionally only the tail was brought in. The

newly hatched young were fed grasshoppers, the skinks being fed to chicks more than a few days old. At this age the chicks leave the nest and shuffle off resting under the shade of the samphire bushes, always in company of one or both of the adults. The young swam freely yet adult birds rarely land on the water. The terns flew out at first light from the nesting colonies to fly ceaselessly over the mulga scrub in search of food. Upon locating their prey the birds swoop down hardly altering their flight, seize the prey and proceed back to the nest site. At no time did the birds make any attempt to procure food from the waters of the lake, in contrast to a group of 200 Marsh Terns that fed continuously over the water. Occasionally the birds would swoop down to scoop up a drink of water.

All nesting birds were in full breeding plumage, although an occasional bird in juvenile plumage was seen in the vicinity. No predation of the young was observed although a Spotted Harrier was seen for twenty minutes flying near the colonies continuously being harassed by many terns. The birds defended their territories by holding their heads high, bill open exposing their bright orange gape and screaming at intruders. In general the birds often sat quietly together at the nest.

Lake Annean is a remarkable lake where in good seasons a great variety of birds gather together to breed on the many small islands. Hoary-headed Grebes were nesting everywhere; most nests contained eggs. The nests were built in samphire bushes, although many were lying high and dry where the receding water had stranded them. It was quite impossible to count the nests as many were neglected, and eggs were everywhere; many washed up on the beaches.

Pied Stilts were scattered over most of the islands, some brooding eggs, but most still building. Two pairs with four large chicks were observed foraging around the shores of the lake.

A small colony of ten or so had built their bulky nests on a small exposed island when we first visited, some had eggs, however when we returned a week later the eggs were gone and the colony deserted. Some 500 m away they were building again, this time on samphire bushes growing in about 15 cm of water, and laying had just commenced.

One or two pairs of Red-kneed Dotterel occupied each island, with breeding commencing.

John Masters visited Lake Wooleen about 250 km west of Lake Annean on 20 September 1980 where he found another colony of the Terns nesting. At the time of his visit the water level of the lake was high and little of the islets was exposed. Approximately 200 birds were present of which thirty pairs were nesting on an exposed low sandy island. The general behaviour of the other birds suggested that as more land became exposed they too would breed.

A small colony of Straw-necked Ibis were nesting on the ground alongside the Terns.

THE DISTRIBUTION OF THE SEA ANEMONE *ACTINIA TENEBROSA* FARQUHAR IN SOUTHWESTERN AUSTRALIA

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INTRODUCTION

The sea anemone *Actinia tenebrosa* Farquhar 1898 is widely distributed on Australian and New Zealand coasts and occurs on rocky shores in the intertidal zone (Ottaway, 1973; 1979a). In Western Australia this species is recorded from the mainland coast near Fremantle and 20 km west at Rottne Island (32° S; 115° 30' E) (Carlgrén, 1954; Black and Johnson, 1979; Ayre, 1982) and at the mouth of the Murchison River (Carlgrén, 1954) but its distribution is otherwise poorly documented.

Recent studies have shown that *A. tenebrosa* may utilize two mechanisms of reproduction and dispersal (Ottaway and Kirby, 1975; Ottaway, 1979b; Black and Johnson, 1979; Ayre, 1982; in press). Asexually produced juveniles are brooded within the coelenterons of a genotypically identical adult (Black and Johnson, 1979), and on release these juveniles attach to the substrate in close proximity to their broodparent (Ottaway, 1979b; Ayre, in press). Genetic